Description

The HP StorageWorks Enclosure 4300 is an Ultra3 SCSI disk drive storage enclosure. These enclosures deliver industry-leading data performance, availability, storage density, and upgradability to meet customers' demanding and growing storage needs. The drive carrier is designed to support the fastest current and next generation Ultra3 and Ultra2 hard drives on the same SCSI bus. The ease of upgrading the StorageWorks Enclosure 4200 to the StorageWorks Enclosure 4300 proves to our customers that HP provides the lowest cost of ownership, as well as the fact that technology transitions can be smooth without disrupting critical business environments.

Models
(NOTE: See "Configuration Information" for International and Japanese variants)

Model 4314R	Rack-mountable 14 drive enclosure with single bus, single power supply	190209-001
Model 4314T	Tower 14-bay drive enclosure, single bus, single power supply, LCD monitor	190210-001
Model 4354R	Rack-mountable 14 drive enclosure with dual bus, dual power supplies	190211-001

Customer Benefits

Higher Performance	Ultra3 SCSI transfer rates combined with the highest spindle count per U of rack space allows the StorageWorks Enclosure 4300 to achieve the greatest I/Os per second.
Storage Capacity	3U rack form factor allows customer to achieve the maximum storage capacity per square foot in the data center.
Upgradability	Ultra3 single and dual I/O upgrade modules make upgrading the StorageWorks Enclosure 4200 to Ultra3 quick and easy.
Investment Protection	With the ability to upgrade, as well as mix and match, existing Ultra2 components with Ultra3, HP makes technology transitions simple and cost effective, and has simplified the transition to the next generation SCSI protocol.
Reduced spares inventory	Universal drives and drive carriers across HP's entire Ultra2, Ultra3, and Ultra320 product offering allow the same drives to be used in servers and external storage.

Product Family Models:

The hp StorageWorks 4300 Enclosure design allows for specific configurations tailored to the needs of all HP server customers. Three models are available today:

- Model 4314R — Rack-mountable 14 drive enclosure with single bus, single power supply
- Model 4314T — Tower mount 14 drive enclosure with single bus, single power supply, LCD monitor
- Model 4354R — Rack-mountable 14 drive enclosure with dual bus, dual power supplies

All models are universal drive enclosures and are supported behind HP Smart Array controllers, HSGx0 controllers, and adapters.

NOTE: For complete compatibility information, refer to the Specifications section of this document.

Feature List

Ultra3 (LVD) data transfer rates (160 MB/s)
3U rack height
Hot pluggable disk drives, power supplies, and fan pack
Redundant fans
Redundant power supplies (optional on the 4314R)
Single or dual bus I/O

Key Features

NOTE: All models of the StorageWorks Enclosure 4300 Family have the following features:

- Ultra3 (LVD) support - Delivering data transfer rates up to 160 MB/s per channel
- 3U rack height
- Supports up to 14 (1-inch) Ultra320 (as well as legacy Ultra3 and Ultra2 drives) Universal hard disk drives
- Provides storage capacity of up to 2TB per enclosure (using 146GB 1-inch disk drives)
- Modular design allows the StorageWorks Enclosure 4300 to be used in any storage configuration from JBOD (Just a Bunch of Disks) to Smart Array storage enclosures to external RAID arrays. Up to 14 enclosures can be mounted in one 42U rack for a single rack storage capacity of up to 28.4TB of disk storage (JBOD configuration) or up to 12 enclosures in an EMA16000 (HSG80 configuration) for a single rack storage capacity of 24.4TB.
- A common storage platform allows for future storage consolidation to the SAN.
- Award-winning innovative SCA (Single Connect Attach) direct connect drive carrier - provides better cooling and reliability for 10K and 15K drives
- Hot pluggable disk drives, power supplies, and fans
- Redundant fans, redundant power supplies and dual bus I/O module
  (Each Enclosure 4314T and 4314R come with a single power supply that is sufficient to provide power to the enclosure and maintain normal operating levels. A second optional redundant power supply is recommended for higher levels of fault tolerance and availability.)
- Environmental Monitoring Unit (EMU) - Monitors environmental conditions within the enclosure and components such as the power supplies and fans
- Easy removal of parts provides better serviceability. No tools are required!

Product Highlights

Upgradability	Upgrading a StorageWorks Enclosure 4200 to a StorageWorks Enclosure 4300 is as easy as swapping out the I/O module on the back of the unit. The I/O module is warm-swappable, therefore during the upgrade power to the unit can remain on, but all I/O operations need to be stopped to ensure that no data is lost during the upgrade.
Mix and Match	All Ultra320, Ultra3, and Ultra2 devices from HP are compatible with one another so customers can mix and match components in the same storage enclosure or server. When Ultra2, Ultra3, and Ultra320 devices are found on the same Ultra3 SCSI bus, each device will transfer data at its individual interface transfer rate up to the transfer rate of the SCSI bus.. NOTE: For customers who operate legacy Models 4310R and 4350R enclosures, the use of 1-inch Universal Ultra2, Utlra3, or Ultra320 disk drives requires the addition of 0.6-inch drive extenders.
Hot Pluggable	Hot pluggable technology is designed into drives, power supplies and redundant cooling fans. Hot pluggable components can be replaced without powering down the storage system or stopping I/O operations. This feature significantly enhances data availability.
Auto SCSI ID Selection	SCSI ID is automatically set when a drive is inserted into a drive bay.
LED Indicators	Front panel LEDs indicate drive activity, required drive service, and power, giving a quick visual assessment of overall system storage status. LED status and fault indicators for the fans and power supplies are located in the back of the enclosure.
Rack Density	The StorageWorks Enclosure 4300 models have a 3U height.
Environment Monitoring Unit (EMU)	Each StorageWorks Enclosure 4300 model is equipped with an EMU that constantly monitors the enclosure, the power supplies, and fans to ensure suggested operating tolerances are maintained.
Single Bus I/O Module	The single bus I/O module allows one SCSI channel to access all drives in the StorageWorks Enclosure 4300.
Dual Bus I/O Module	The dual bus I/O module allows two SCSI channels to access a single StorageWorks Enclosure 4300. This allows for greater fault tolerance (controller duplexing) or provides access from two different servers to two separate storage areas.
Fault Tolerance	With the dual bus I/O module, redundant power supplies and fans, the StorageWorks Enclosure 4300 family provides a high level of system availability. Using an internal or external RAID Array, the StorageWorks Enclosure 4300 family can be configured for RAID levels 0, 1, 0 1, 5.
Manageability	Depending on the host controller, the StorageWorks 4300 Enclosure is managed by HP Insight Manager or StorageWorks Command Console.
Compatibility and Integration Testing	Intensive compatibility and performance testing with HP ProLiant severs and AlphaServers ensures the highest level of integration available in the industry on a HP server. For a complete list of supported HP servers and workstations, please refer to the QuickSpecs and/or User Guide of the array controller or Host Bus adapter that you are planning to use. The list of supported array controllers and SCSI adapters is provided under "Related Options, Controllers

Product Highlights

Product Kit Contents

Model 4314T	Single power supply, single bus I/O module, 14 drive blanks, warranty card, AC power cord, Enclosure 4300 tower user guide, EMU booklet, HP SmartStart CD Kit, documentation CD, and one 12-ft VHDCI to VHDCI SCSI cable:
Model 4314R	Single power supply, single bus I/O module, 14 drive blanks, warranty card, mounting hardware, Enclosure 4300 user guide, EMU booklet, HP SmartStart CD Kit, documentation CD, and two 12-ft VHDCI to VHDCI SCSI cables (one 110V and one 220V).
Model 4354R	Redundant power supplies, dual bus I/O module, 14 drive blanks, warranty card, mounting hardware, Enclosure 4300 user guide, EMU booklet, HP SmartStart CD Kit, documentation CD, and two 12-ft VHDCI to VHDCI SCSI cables (one 110V and one 220V).

NOTE: A different SCSI cable may be required when the StorageWorks Enclosure 4300 is intended for connection to an HSG80 controller in a Model 2200 controller enclosure or a host-based adapter on an Alpha server. See the Related Options section of this document for cable ordering information.

NOTE: To maintain proper cooling and airflow, a drive blank or drive must occupy all bays during operation.

Warranty

StorageWorks Enclosure 4300 family: Three-year limited warranty

NOTE: Certain restrictions and exclusions apply. Consult the Customer Support Center at 1-800-345-1518 for details.

Hard drive Pre-Failure Warranty: When used with any one of the StorageWorks Smart Array Family controllers and monitored under HP Insight Manager (v4.20 or later), HP hard drives are supported by a Pre-Failure (replacement) Warranty.

NOTE: Pre-Failure Warranty is available on all HP Prosignia and HP ProLiant servers using HP Insight Manager v4.20 or later, and covers Pentium Pro processors, ECC memory, server hard drives, and external storage enclosure hard drives (except the 535 MB Fast-SCSI-2 hard drive) using HP IDA, IDA-2, HP SMART SCSI Array Controllers, HP SMART-2 Array Controllers or HP Smart Array Controllers. Certain restrictions and exclusions apply. Consult the Customer Support Center at: 1-800-345-1518 for details.

Service And Support

Software Product Services
Standalone telephone support
Rights to new license version
Media and documentation updates

Hardware Product Services
Installation services
On-site maintenance (includes warranty support)
Response time upgrades during the warranty period
Post-warranty coverage
RAID setup and performance consulting via statement of work
For additional hardware installation and maintenance information, please refer to the URL listed below:
http://www.hp.com/hps/carepack/services/cp_installation.html

Warranty Upgrade Options
Response - Upgrade on-site response from next business day to same day 4 hours
Coverage - Extend hours of coverage from 9 hours x 5 days to 24 hours x 7 days
Duration - Select duration of coverage for a period of 1, 3, or 5 years

Hardware Product Services
Sample part numbers:

- FM-**XHW-36 3 year, uplift to 5 x 9, Next Day Response
- FM-**4HR-36 3 year, uplift to 5 x 9, 4-hour Response
- FM-**724-36 3 year, uplift to 7 x 24, 4-hour Response

** Represents a two-digit, product-specific code
Care Pack is defined as an upgrade to the product warranty attribute, available for a specific duration and hours of coverage.
Care Pack is not available for less than the product's warranty duration.
Care Pack is available for sale anytime during the warranty period for most products, but the commencement date will be the same as the Warranty Start Date (delivery date to end user customer). Proof of purchase may be required.
Care Pack services are prepaid.
For additional HP Care Pack Services (hardware & software) information, as well as orderable part numbers, please refer to the URL http://www.hp.com/hps/carepack/

Components
The following brick level options/components do not have individual HP Care Pack Services. These items will be included in product Care Pack Services into which they are installed.

Disk Drives	Tape Drives	CD/DVD ROM	SCSI Hubs in SBBs	Adapters
Bus Converters	Backplane RAID Controllers	Power Supplies	Cabling	Fans

Configuration Information

Product	Shipping Dimensions	UPC Code	Part Number
StorageWorks Enclosure 4314T	25.25 x 12.5 x 23.5 in/64.1 x 31.8 x 59.7 cm	720591469795	190210-001
StorageWorks Enclosure 4314T (Int'l)		720591469801	190210-B31
StorageWorks Enclosure 4314T (Japan)		720591469818	190210-291
StorageWorks Enclosure 4314R	25.25 x 12.5 x 23.5 in/64.1 x 31.8 x 59.7 cm	720591469566	190209-001
StorageWorks Enclosure 4314R (Int'l)		720591469583	190209-B31
StorageWorks Enclosure 4314R (Japan)		720591469788	190209-291
StorageWorks Enclosure 4354R	25.25 x 12.5 x 23.5 in/64.1 x 31.8 x 59.7 cm	720591469825	190211-001
StorageWorks Enclosure 4354R (Int'l)		720591469832	190211-B31
StorageWorks Enclosure 4354R (Japan)		720591469849	190211-291
Ultra3 Single Bus Upgrade I/O Module	12.75 x 8 x 3.75 in/32.13 x 20.16 x 9.45 cm	720591469856	190212-B21
Ultra3 Dual Bus Upgrade I/O Module	13.25 x 8 x 8.5 in/33.39 x 20.16 x 21.42 cm	720591469863	190213-B21
Redundant Power Supply, 499 watts	3.75 x 8 x 12.75 in/9.52 x 20.32 x 32.38 cm	808736966726	338296-B21
Redundant Power Supply, 499 watts (Int'l)		808736966740	338296-B22
Redundant Power Supply, 499 watts (Japan)		808736966764	338296-B23

	Description	UPC Code	Part Number
Controllers & Adapters Supported	HSG80 Controller	720591351335	176622-B21
	NOTE: HSG80 connection to the model 4300 requires the use of the Model 2200 controller shelf: 135820-B21		
	Smart Array 6402		273914-B21
	Smart Array 5302/128		283552-B21
	Smart Array 5304/256		283551-B21
	Smart Array 642		291967-B21
	NOTE: Supported at Ultra2 speeds		
	Smart Array 532		225338-B21
	Smart Array 5i/5i Plus		N/A
	NOTE: Single external SCSI channel supported on select ProLiant Servers. See Server QuickSpecs for specific model information.		
	64-bit/133MHz dual channel Ultra320 SCSI Adapter		268351-B21
	64-bit Dual Channel Wide Ultra3 SCSI Adapter	743172876379	129803-B21
	1 channel Ultra2 (LVD) Adapter (AlphaServer systems)	743172900562	136237-B21/ SN-KZPCA-AA
	1 channel Ultra2 (LVD) Adapter (AlphaServer systems)	613326184219	3X-KZPCA-AA
Power Options	Redundant Power Supply, 499 watts	808736966726	338296-B21
	Redundant Power Supply, 499 watts (Int'l)	808736966740	338296-B22
	Redundant Power Supply, 499 watts (Japan)	808736966764	338296-B23
	StorageWorks Enclosure Ultra3 Single Bus I/O Module	720591469856	190212-B21
	StorageWorks Enclosure Ultra3 Dual Bus I/O Module	720591469863	190213-B21
	StorageWorks Enclosure Tower to Rack Conversion Kit	743172948182	150213-B21
	39-ft (12m) VHDCI to VHDCI SCSI Cable	743172948199	150214-B21
	24-ft (7m) VHDCI to VHDCI SCSI Cable	720591275983	164604-B21

Options

Rack Options

Wide 41U cabinet (Opal)	720591823511	238789-B21

NOTE: Configuration restrictions apply, please see modular array QuickSpecs for details: http://h18006.www1.hp.com/storage/arraysystems.html42U

Modular Storage Cabinet 60 Hz (Opal)	720591398378	180311-B21
36U Modular Storage Cabinet 60 Hz (Opal)	720591398606	180313-B21
22U Modular Storage Cabinet 60 Hz (Opal)	720591398651	180315-B21
41U Modular Storage Cabinet 60 Hz (Blue)	720591398880	180317-B21
41U Modular Storage Cabinet 50 Hz (Blue)	720591398897	180318-B22

NOTE: Each Modular Storage Cabinet (42U, 41U, 36U, and 22U) comes with redundant 220 to 240V PDUs and power cables to accommodate Modular Array configurations. For more details on Modular Array solutions, see http://h18006.www1.hp.com/storage/arraysystems.html

Legacy Racks Supported

Rack 7142
Rack 9142
Rack 9136
Rack 9122

NOTE: Certain power support and cooling restrictions apply when housing a maximum number of Model 4314R or Model 4354R enclosures in one of the supported HP racks. Please refer to http://h18006.www1.hp.com/storage/index.html for more information or consult the Customer Support Center at 1-800-345-1518 for details.

Universal SCSI Drives
Ultra 320 Drives

146.8-GB Pluggable Ultra320 SCSI 10,000 rpm Hard Drive	286716-B22
72.8-GB Pluggable Ultra320 SCSI 10,000 rpm Hard Drive	286714-B22
36.4-GB Pluggable Ultra320 SCSI 10,000 rpm Hard Drive	286713-B22
72.8-GB Pluggable Ultra320 SCSI 15,000 rpm Hard Drive	286778-B22
36.4-GB Pluggable Ultra320 SCSI 15,000 rpm Hard Drive	286776-B22
18.2-GB Pluggable Ultra320 SCSI 15,000 rpm Hard Drive	286775-B22
0.6-inch (1.52 cm) Drive Extenders (package of 4)	148649-B21

(1)Ultra 2 and Ultra3 drives are also supported in 4300 configurations
(2) For pre-existing 10-bay solutions, drive height extenders are attached to 1 in drives for use in 1.6 in drive bay.

NOTE: Go to the HP SCSI Hard Drive Compatibility table for complete drive compatibility information (http://www.hp.com/products/harddiskdrives). Using hard drives in unsupported configurations will result in voiding the warranty and could result in damage to the drive and/or loss of data.

SCSI Cable Options

Cables for use with HSG80 controller in the Model 2200 controller enclosure

2M SCSI cable for connection to the Model 2200 Controller Shelf	720591304515	168257-B21
3M SCSI Cable for connection to the Model 2200 Controller Shelf	743172825544	188505-B21

Cables for use with Smart Array controllers

12 ft VHDCI to 68-pin SCSI Cable	743172660848	341177-B21
24-ft VHDCI to VHDCI SCSI Cable	720591275983	164604-B21
39-ft VHDCI to VHDCI SCSI Cable	743172948199	150214-B21

Cables for use with the KZPCA-AA host bus adapter

1M SCSI 68HD Cable	None	BN38C-01
2M SCSI 68HD Cable	None	BN38C-02
5M SCSI 68HD Cable	None	BN38C-05

Technical Specifications

Protocol Support	Wide Ultra3 (LVD) Wide Ultra2 (LVD)	
O/S Support	Defined by specific HP array controller or SCSI adapter used; please refer to the QuickSpecs and/or User Guide of the specific array controller or SCSI adapter	
Dimensions (HxWxD)	Tower Rack	22.5 x 13.25 x 23 in (56.7 x 33.9 x 57.96 cm) 5.2 x 19 x 20.5 in (13.1 x 47.88 x 51.66 cm)
Shipping Dimensions (HxWxD	Tower Rack Redundant Power Supply	34.25 x 14.5 x 31.25 in (86.31 x 36.54 x 78.75 cm) 34.25 x 14.5 x 31.25 in (86.31 x 36.54 x 78.75 cm) 3.75 x 8.0 x 12.75 in (9.52 x 20.32 x 32.38 cm)
Weight	Tower Rack Redundant Power Supply	93 lb (42.8 kg) 68 lb (30.9 kg) 6.6 lbs (3.0 kg)
LED Indicators (on front panel)	EMU Status LED (left) Enclosure Power LED (middle) Fault LED (right)	
Drive LED Indicators (on drive trays)	Drive LED (top) On Line LED (middle) Drive Failure LED (bottom)	
Enclosure LED Indicators (back of unit)	I/O Module (top) EMU (middle) Power supplies (bottom)	
Input Requirements	Nominal Line Voltage Range Line Voltage Line Frequency Typical Input Current	110 to 240 V AC 90 to 264 V AC 47 to 63 Hz 2.3A at 120 V AC
Relative Humidity (non-condensing)	Operating Shipping	10% to 90% 5% to 90%
Enclosure LED Indicators (back of unit)	Smart Array 6402 Smart Array 5302/128 Smart Array 5312 Smart Array 5304/256 Smart Array 642 NOTE: Supported at Ultra2 speeds Smart Array 532 Smart Array 5i/5i Plus NOTE: Single external SCSI channel supported on select ProLiant Servers. See Server QuickSpecs for specific model information. HSG80 Controller HSG60 Controller 64-bit Dual Channel Wide Ultra3 SCSI Adapter 1 channel Wide Ultra2 Adapter (AlphaStations) 1 channel Wide Ultra2 Adapter (AlphaServer systems) NOTE: See your server and controller compatibility matrix for details on controller and server compatibility.	
Power	377 Watts per supply (load)	
BTU (220 volts)	Single power supply 14 drives Single power supply 5 drives Single power supply 1 drive Dual power supply 14 drives Dual power supply 5 drives Dual power supply 1 drive	1164 BTUs/hour 536 BTUs/hour 273 BTUs/hour 1232 BTUs/hour 625 BTUs/hour 352 BTUs/hour
Temperature Range	Operating Shipping NOTE: To maintain proper cooling and airflow, a drive blank or drive must occupy all bays during operation.	50° to 94° F (10° to 35° C) -40° to 151° F (-40° to 66° C)

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